

## REMARKS

In response to the Office Action mailed on March 11th, 2004, Applicant wishes to enter the following remarks for the Examiner's consideration.

Applicant has amended claims 1, 3, 8, 18, 27, 34 and 44. Applicant has cancelled claims 4 and 6. Claims 1-3, 5 and 7-44 are pending in the application.

### **Rejection of claims under 35 USC §102**

**Claims 1, 2 and 4-7** have been rejected under 35 USC §102 as being anticipated by Okumura et al. (Patent No. US 6,624,433). Applicant respectfully traverses this rejection of the claims.

Claim 1 has been amended to incorporate the limitations of both claim 4 and claim 6. In particular, Applicant has amended claim 1 to include "a retainer for holding the transmitting end of the first optical fiber and the receiving end of the second optical fiber such that the receiving end of the second optical fiber receives the light beam from the transmitting end of the first optical fiber". This limitation was previously presented in dependent claim 6.

Okumura, Nguyen and Rye, whether considered alone or together fail to teach such a retainer. Nguyen (Fig. 2) discloses a transmitter 30 to which only first optical fibers are attached and a receiver 32 to which only receiving optical fibers are attached. Further the ends of the fibers that transmit and receive the light beam are not retained. Rye (Fig 3) shows two separate supports (85 and 95), each of which holds a single fiber. Again, the ends of the fibers that transmit and receive the light beam are not retained. None of

the references show a single retainer that holds both fibers. Use of a single retainer allows to fibers to be aligned more accurately and allows for accurate edge detection.

Applicant has further amended claim 1 to incorporate the limitation of claim 4. Claim 1 now specifies that at least one of the first and second optical fibers is a single-mode optical fiber as previously called for in claim 4. The use of single-mode optical fibers has several benefits, as outlined in the specification, which allow the edge detector to achieve a greater accuracy. None of the cited references teach or suggest the use of a single-mode fiber. In particular, Okumura Fig. 8b teaches away from the use of a single-mode fiber. Okumura teaches that the light beam 'R' must be large enough to cover the light-sensing surface (column 19 lines 3-10). I.e. Okumura teaches that the diameter of the light beam must be larger than some value. In contrast, it is well known in the art that for a fiber to permit propagation of a single-mode only, its diameter must be less than a given value related to the wavelength of the light. Further, Nguyen does not teach the use of lasers and Rye (Fig. 3) shows light emitted perpendicular to the axis of the fiber, which suggests the use of multi-mode fibers.

Claim 4 has been cancelled.

Claim 5 calls for the light beam to be less than 10 microns in diameter. The Examiner does not indicate any teaching in the Okumura reference for this element.

Claim 6 has been cancelled.

Claim 7 calls for the retainer to comprise and frame and at least one retaining block. The Examiner does not indicate any teaching in the Okumura reference for this element.

In light of the foregoing amendment and remarks, Applicant respectfully submits that the Okumura reference does not teach, suggest, disclose or otherwise anticipate the recitations of claims 1, 2, 5 and 7. Applicant thus respectfully requests that this basis of rejection of the claims be withdrawn and that a Notice of Allowance for these claims be mailed at the Examiner's earliest convenience.

**Claims 27-33** have been rejected under 35 USC §102 as being anticipated by Okumura et al. (Patent No. US 6,624,433). Applicant respectfully traverses this rejection of the claims in view of the amendment to claim 27.

Claim 27 has been amended, in a similar manner to claim 1, to include "a retainer for holding the transmitting end of the first optical fiber and the receiving end of the second optical fiber such that the receiving end of the second optical fiber receives the light beam from the transmitting end of the first optical fiber" and to specify that at least one of the first and second fiber is a single-mode fiber. As discussed above with reference to claim 1, these features are not taught by Okumura and provide for a more accurate system for detecting the edge of an object.

Claims 28-33 depend from claim 27.

**Claim 34-43** have been similarly amended to call for the first and

second mode fibers to comprise single mode optical fibers held in a retainer such that the light beam from the first optical fiber is received by the second optical fiber. As discussed above with reference to claim 1, these features are not taught by Okumura, nor by the combination of Okumura with Nguyen or Rye, and provide for a more accurate system for detecting the edge of an object.

In light of the foregoing amendment and remarks, Applicant respectfully submits that the Okumura and Nguyen (or Rye) references, whether considered alone or in combination fail to teach, disclose, suggest or otherwise render obvious the recitations of claims 27-43. Applicant thus respectfully requests that this basis of rejection of the claims be withdrawn and that a Notice of Allowance for these claims be mailed at the Examiner's earliest convenience.

### **Rejection of claims under 35 USC §103**

**Claims 8-17** have been rejected under 35 USC §103(a) as being anticipated by Okumura et al. (Patent No. US 6,624,433) in view of Nguyen (Patent No. US 5,389,789) or Rye (Patent No. US 5,389,795). Applicant respectfully traverses this rejection of the claims.

The examiner acknowledges that Okumura does not disclose a retainer for holding the first and second optical fibers and relies upon Nguyen or Rye to cure this defect. However, no prima facie case is made for combining Okumura with Nguyen or Rye. Nguyen and Rye disclose systems for use in paper making -- an industry unrelated to the manufacture or test of optical or electronic components. Further Nguyen and Rye disclose systems for

detecting faults in moving paper, whereas the present invention relates to detecting edges for the purpose of positioning an object in an stationary position.

The references whether considered alone or together fail to teach the recitations of the claims, since neither Nguyen nor Rye teach a retainer for holding the first and second single-mode optical fibers. Nguyen (Fig. 2) discloses a transmitter 30 to which only first optical fibers are attached and a receiver 32 to which only receiving optical fibers are attached. Rye (Fig 3) shows two separate supports (85 and 95), each of which holds a single fiber. Neither shows a single retainer that holds both fibers. Use of a single retainer allows to fibers to be aligned more accurately and allows for accurate edge detection.

Claim 8 has been amended to specify that the first and second optical fibers are single-mode fibers. As discussed above with reference to claim 1, Applicant submits that this feature is not taught in the cited references and results in improved accuracy.

In response to claims 8-17, the examiner asserts that “it is inherent that the maximum power is determined by calculation”. In response to claims 36-37, the examiner asserts that “it is inherent that the maximum power is determined by calibration”. Applicant respectfully traverses these apparently contradictory assertions and suggests that the method of determining the maximum power is not an inherent feature of the system and that the method of calibration is not taught by Okumura, Nguyen or Rye or a combination thereof. In particular, claim 13 calls for the maximum power to be “predetermined by a calibration”.

In light of the foregoing remarks, Applicant respectfully submits that the Okumura and Nguyen (or Rye) references, whether considered alone or in combination fail to teach, disclose, suggest or otherwise render obvious the recitations of claims 8-17. Applicant thus respectfully requests that this basis of rejection of the claim be withdrawn and that a Notice of Allowance for claims 8-17 be mailed at the Examiner's earliest convenience.

**Claim Objections.**

Claims 3, 18-26 and 44 were objected to as being dependent upon a rejected base claim. Claims 3, 18 and 44 have been rewritten in independent form and are now believed to be in condition for allowance. Claims 19-26 depend from claim 18. Allowance of claims 3, 18-26 and 44 is therefore respectfully requested at the Examiner's earliest convenience.

In light of the foregoing amendments and explanations, applicant submits that all rejections of and objection to claims 1-3, 5 and 7-44 have been overcome. Allowance of claims 1-3, 5 and 7-44 is therefore respectfully requested at the Examiner's earliest convenience. Although additional arguments could be made for the patentability of each of the claims, such arguments are believed unnecessary in view of the above discussion. The undersigned wishes to make it clear that not making such arguments at this time should not be construed as a concession or admission to any statement in the Office Action.

Please contact the undersigned if you have any questions regarding this application.

Respectfully submitted,



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